## **List of Contents**

## NUMBER 1

Editorial Graeme Bonham-Carter	iii	First Issue of 2000
Sven Fuhrmann, Werner Kuhn and Ulrich Streit	1	Guest editorial
Doris Dransch	5	The use of different media in visualizing spatial data
Sven Fuhrmann	11	Designing a visualization system for hydrological data
Gerd Buziek	21	Legend designs for noninteractive cartographic animations
Christian Haeberling	29	A digital cartographic workflow for glaciomorphological map series — evaluating Macromedia FreeHand as educational tool
Clemens Oberholzer and Lorenz Hurni	37	Visualization of change in the Interactive Multimedia Atlas of Switzerland
Daniel Richard	45	Development of an internet atlas of Switzerland*
Hardy Pundt and Klaus Brinkkötter-Runde	51	Visualization of spatial data for field based GIS
Andreas D. Blaser, Monika Sester and Max J. Egenhofer	57	Visualization in an early stage of the problem-solving process in GIS
Jürgen Döllner and Klaus Hinrichs	67	An object-oriented approach for integrating 3D visualization systems and GIS
Christoph Uhlenküken, Benno Schmidt and Ulrich Streit	77	Visual exploration of high-dimensional spatial data: requirements and deficits*
Heiko Zumsprekel and Torsten Prinz	87	Computer-enhanced multispectral remote sensing data: a useful tool for the geological mapping of Archean terrains in (semi)arid environments
Matthias Kreuseler	101	Visualization of geographically related multidimensional data in virtual 3D scenes
Robert M. Edsall, Mark Harrower and Jeremy L. Mennis	109	Tools for visualizing properties of spatial and temporal periodicity in geographic data
John C. Butler	119	Another Node On the interNet
		NUMBER 2
B. Cappelaere, J. Touma and C. Peugeot	121	A recursive algorithm for connectivity analysis in a grid; application to 2D hydrodynamic modeling in heterogeneous soils*
Borut Žalik	137	Two efficient algorithms for determining intersection points between simple polygons*
Jaco H. Baas	153	EZ-ROSE: a computer program for equal-area circular histograms and statistical analysis of two-dimensional vectorial data*

P. Hejda and M. Reshetnyak	167	The grid-spectral approach to 3-D geodynamo modelling*	
Sankar Kumar Nath, Shamsuddin Shahid and Pawan Dewangan	177	SEISRES — a Visual C <sup>++</sup> program for the sequential inversion of seismic refraction and geoelectric data*	
E. Santoyo, A. Garcia, G. Espinosa, I. Hernandez and S. Santoyo	201	STATIC_TEMP: a useful computer code for calculating static formation temperatures in geothermal wells*	
Christian Ekberg, Susanne Börjesson, Allan T. Emrén and Anders Samuelsson	219	MINVAR and UNCCON, computer programs for uncertainty analysis of solubility calculations in geological systems*	
G. R. J. Cooper	227	Gridding gravity data using an equivalent layer*	
CD Review Brenda S. Pierce	235	Atlas of Coal Geology, AAPG Studies in Geology #45 (Volume 1 Coal Geology, Volume 2 Coal Petrology); Alexander R. Papp, James C. Hower, Douglas C. Peters (Eds.), Energy Minerals Division, American Association of Petroleum Geology, 1998. ISBN 0891811419, US\$ 52 (US\$ 39 for AAPG & TSOP members), CD-ROM for Windows or Mac	
Software review Wei Luo	237	RiverTools, Version 2.0; Research Systems, Inc., 4990 Pearl East Circle, Boulder, CO 80301	
Book Reviews David Unwin	239	Spatial Multimedia and Virtual Reality; Antonio S. Camara and Jonathan Raper (editors), 159 p., Taylor & Francis, London, 1999, ISBN 07484 0819 3, UK £49.95 (hardback); ISBN 07484 0820 7, UK £24.95 (paperback)	
Roger L. Kaesler	241	Numerical Palaeobiology: Computer-Based Modelling and Analysis of Fossils and Their Distributions; Edited by David A.T. Harper, John Wiley & Sons, Ltd, Chichester, 1999, 468 pp, ISBN: 0471974056, UK £65.00.	
Ana F. Militino	243	Modern Regression Methods; Thomas P. Ryan, John Wiley & Sons, New York, 1996, 515 pp., ISBN 0-471-52912-5, US \$74.95	
John C. Butler	245	Another Node On the interNet	
NUMBER 3			
	247	Editorial	
Charles W. Harper Jr	249	A Fortran 90 program for statistical testing of alleged thickening and/or thinning upward patterns in sequences of strata*	
Y. R. Fares	267	Calculation of transverse energy regime in curved channels*	

277 A feasible set for chemical speciation problems

Ramp function regression: a tool for quantifying climate

293

transitions\*

Pierre Brassard and Paul Bodurtha

Manfred Mudelsee

Linet Özdamar, Melek Demirhan, Alper Özpinar and Burak Kilanç	309	A fuzzy areal assessment approach for potentially contaminated sites
K. J. Hollenbeck, J. Šimunek and M.Th van Genuchten	319	RETMCL: Incorporating maximum-likelihood estimation principles in the RETC soil hydraulic parameter estimation code*
R. Middleton, J. Brasington, B. J. Murphy and L. E. Frostick	329	Monitoring gravel framework dilation using a new digital particle tracking method
Short Note José Manuel Vacas Peña	341	A program in Pascal to simulate the superposition of two or three fold systems*
Book Reviews		
Ulrich Zier	351	Economic Risk in Hydrocarbon Exploration; Ian Lerche, James A. MacKay, Academic Press, San Diego, 1999, 404 pp. ISBN: 0-124-44165-3, US \$129
Timothy C. Coburn	353	Geographical Information Systems: Principles, Techniques, Applications and Management 2nd Edition, Volumes 1 and 2, Paul A. Longley, Michael F. Goodchild, David J. Maguire and David W. Rhind (Eds.), 11240 pp., Wiley, New York, 1999, ISBN 0-471-32182-6, US \$345.00
Stuart Birnbaum, Leslie Kanat, Alan Morris and John Butler	355	Another Node on the Internet

## **NUMBER 4**

	359	Editorial
P. M. Atkinson and P. Lewis	361	Geostatistical classification for remote sensing: an introduction
M. Chica-Olmo and F. Abarca-Hernández	373	Computing geostatistical image texture for remotely sensed data classification
S. Berberoglu, C. D. Lloyd, P. M. Atkinson and P. J. Curran	385	The integration of spectral and textural information using neural networks for land cover mapping in the Mediterranean
Cynthia S. A. Wallace, Joseph M. Watts and Stephen R. Yool	397	Characterizing the spatial structure of vegetation communities in the Mojave Desert using geostatistical techniques
Barry Haack and Matthew Bechdol	411	Integrating multisensor data and RADAR texture measures for land cover mapping
M. Schröder, M. Walessa, H. Rehrauer, K. Seidel and M. Datcu	423	Gibbs random field models: a toolbox for spatial information extraction
Stuart Barr and Michael Barnsley	433	Reducing structural clutter in land cover classifications of high spatial resolution remotely-sensed images for urban land use mapping
Limin Yang	451	Integration of a numerical model and remotely sensed data to study urban/rural land surface climate processes
Giles M. Foody	469	Estimation of sub-pixel land cover composition in the presence of untrained classes

Graham R. Smith, Jamie C. Woodward, 479 Interpreting Pleistocene glacial features from SPOT HRV data D. Ian Heywood and Philip L. Gibbard using fuzzy techniques Brian S. Penn and John C. Butler 491 Another Node on the interNet **NUMBER 5** Zhanjun Ying 493 iksim: A fast algorithm for indicator kriging and simulation in the presence of inequality constraints, hard and soft data\* Eric A. de Kemp 509 3-D visualization of structural field data: examples from the Archean Caopatina Formation, Abitibi greenstone belt, Québec, Canada\* A. N. Khondaker 531 Modeling the fate of drilling waste in marine environment — an overview Terence R. Smith, George E. Merchant 541 Transient attractors: towards a theory of the graded stream for and Bjorn Birnir alluvial and bedrock channels Donald L. Baker A Darcian integral approximation to interblock hydraulic conductivity means in vertical infiltration Hsien-cheng Chang, 591 Lithofacies identification using multiple adaptive resonance David C. Kopaska-Merkel, theory neural networks and group decision expert system Hui-Chuan Chen and S. Rocky Durrans Short Notes Michael M. Kimberley 603 The use of sino-Japanese characters to identify locations on figures\* EZGEOREF: a program for transformation of GEOREF database 607 Ali T. Al-Mishwat bibliographical extracts to reference formats suitable for earth science journals' Sheena K. Beaverson, Robert J. Krumm 613 Another Node on the interNet and John C. Butler **NUMBER 6** Editorial John C. Butler The Year 2000 Challenges Special Issue for the Journal of Computers & Geosciences E. C. Grunsky The International Association for Mathematical Geology WWW/ 617 FTP site: an analysis of the first five years and some thoughts for the future John C. Butler 627 An academic challenge for the year 2000: perfect the memex Warren D. Huff Colleges and universities: survival in the information age 635 641 Developing and teaching online courses in geology at the two-Pamela J. W. Gore year college level in Georgia

647

Keeping our focus: a perspective on distance learning and the

large introductory science class

William A. Prothero Jr

and Alan K. Zundel

J. D. Hays, S. Pfirman, B. Blumenthal, K. Kastens and W. Menke	657	Earth science instruction with digital data
Donald R. Johnson, Martin Ruzek and Mike Kalb	669	Earth System Science and the Internet
Carl E. Renshaw and Holly A. Taylor	677	The educational effectiveness of computer-based instruction
Holly Dodson, Paula Levin, Sally Ride and Randall Souviney	683	The EarthKAM project: creating space imaging tools for teaching and learning
Eryn Klosko, John DeLaughter and Seth Stein	693	Technology in introductory geophysics: the high-low mix
Sara G. McNeil, Bernard R. Robin and Robert M. Miller	699	Facilitating interaction, communication and collaboration in online courses
Short notes Charles F. Kluth and Jefferson D. Wilbur	709	Compact discs in support of training in structural geology in an industrial setting: a case study
Wayne Greaves and Ken Heideman	713	Interactive multimedia and internet training for technical professionals in the oil and gas industry
J. C. Butler	719	Another Node On the interNet
		NUMBER 7
Editorial Dan Merriam and Graeme Bonham-Carter	721	A Tribute to Peter Henn
E. Pardo-Igúzquiza, W. Schwarzacher and F. J. Rodriguez-Tovar	723	A library of computer programs for assisting teaching and research in cyclostratigraphic analysis*
Yafang Su, Joan Slottow and Avi Mozes	741	Distributing proprietary geographic data on the World Wide Web — UCLA GIS Database and Map Server
Jonathan M. Lees	751	Geotouch: software for three and four dimensional GIS in the earth sciences*
D. Insergueix-Filippi, E. Tric, A. Batoul and G. Labrosse	763	Spectral modelling of mantle convection in a non orthogonal geometry: application to subduction zones*
Rafael L. Torres-Roldan, Antonio Garcia-Casco and Pedro A. Garcia-Sanchez	779	CSpace: an integrated workplace for the graphical and algebraic analysis of phase assemblages on 32-bit wintel platforms*
A. Dodds	795	Migrate2: a PC program for modelling the generation, migration and accumulation of hydrocarbons in four dimensions*
Victor Pinto, Lluis Rivero and Albert Casas	809	Teaching oriented geophysical software*
Ross K. Meentemeyer and Aaron Moody	815	Automated mapping of conformity between topographic and geological surfaces
Norman L. Jones, Michael J. Kennard	831	Fast algorithm for generating sorted contour strings

Short Note Kazuki Koketsu and Toshikatsu Yoshi	i 839	A seismicity database and interactive retrieval tool: SeisView*
l'Iyas Çağlar	847	Visual interpretation of superposed self-potential anomalies in mineral exploration*
Book review Timothy C. Coburn	853	Geographic information systems: an introduction—2nd ed, by Tor Bernhardsen
Software review	855	
Mark Francek and John C. Butler	865	Another Node On the interNet
		NUMBER 8
Guest Editorial Shahab Mohaghegh	867	Applications of virtual intelligence to petroleum engineering
F. Aminzadeh, Jacob Barhen, C. W. Glover and N. B. Toomarian	869	Reservoir parameter estimation using a hybrid neural network
Muhammad Sahimi	877	Fractal-wavelet neural-network approach to characterization and upscaling of fractured reservoirs
Patrick M. Wong, Min Jang, Sungzoon Cho and Tom D. Gedeon	907	Multiple permeability predictions using an observational learning algorithm
Maqsood Ali and Adwait Chawathé	915	Using artificial intelligence to predict permeability from petrographic data
Shahab Mohaghegh, Andrei Popa and Sam Ameri	927	Design optimum frac jobs using virtual intelligence techniques
Bob Shelley and Stan Stephenson	941	The use of artificial neural networks in completion stimulation and design
Ahmed Ouenes	953	Practical application of fuzzy logic and neural networks to fractured reservoir characterization
H. Doraisamy, T. Ertekin and A. S. Grader	963	Field development studies by neuro-simulation: an effective coupling of soft and hard computing protocols
C. H. Wu, R. D. Soto, P. P. Valko and A. M. Bubela	975	Non-parametric regression and neural-network infill drilling recovery models for carbonate reservoirs
D. Yarger and J. C. Butler	989	Another Node On the interNet
	- 1	Announcement
		NUMBER 9–10
Chaim Keller and John K. Hall	991	Using a digital terrain model to calculate visual sunrise and sunset times
Verahmiel Doytsher	1001	A rubber sheeting algorithm for non-rectangular maps*

Antonio M. Casas, Angel L. Cortés, Adolfo Maestro, M. Asunción Soriano, Andres Riaguas and Javier Bernal	1011	LINDENS: A program for lineament length and density analysis*
A. K. Jain, A. Banerjee, A. K. Gupta, N. J. Thomas, K. N. Misra and K. Chandra	1023	A spreadsheet program to optimize kinetic parameters of organic matter from laboratory pyrolysis data*
A. Quiquerez, P. Allemand and G. Dromart	1029	DIBAFILL: a 3-D two-lithology diffusive model for basin infilling*
Roger S. Bivand	1043	Using the R statistical data analysis language on GRASS 5.0 GIS database files
Suhas Phadke, Dheeraj Bhardwaj and S. K. Dey	1053	An explicit predictor-corrector solver with application to seismic wave modelling
Short Note Robert R. Dedrick, John D. Halfman and D. Brooks McKinney	1059	An inexpensive, microprocessor-based, data logging system
Book reviews Timothy C. Coburn	1067	GIS and Multicriteria Decision Analysis by Jacek Malczewski. Wiley, New York, 1999. 392 pp., ISBN 0-471-32944-4, US \$79.00
Vera Pawlowsky-Glahn	1069	Multivariate Geostatistics, An Introduction With Applications, Second, Completely Revised Edition by Hans Wackernagel, Springer, Berlin, 1998, 291 pp., ISBN 3-540-64721-X, DM 89.00.
Bill Slattery and John C. Butler	1071	Another Node On the interNet
	1	Current Literature Survey